

MEMORANDUM

TO: DEQ Regional Drinking Water Program
Regional Engineering Managers
Health District Supervisors
DEQ and Health District Drinking Water Staff
FROM: Jerri Henry, DEQ Drinking Water Program Manager
DATE: June 25, 2018
SUBJECT: Response to Health Advisory Exceedances

PROGRAM DIRECTIVE

Introduction

The purpose of this directive is to establish uniform instructions and protocol for drinking water program managers and compliance staff to respond to an exceedance of a drinking water contaminant health advisory (HA). Tables 1-3 of this document provide a list of the current HAs. For updates and additional information regarding HAs, visit the Environmental Protection Agency's Health Advisory Program website. Contamination levels above the HA should be promptly shared with DEQ, affiliated health district (HD), and the state office rule lead.

Background

Serious drinking water contamination incidents in Idaho are infrequent and generally short in duration. However, when sampling results are received that indicate a significant potential to have serious effects on human health as a result of short-term exposure, DEQ or HD staff must take quick action. Due to the lengthy process of rule promulgation and other factors, EPA may create an HA for an unregulated contaminant as a measure to guide decisions. The lack of an established maximum contaminant level (MCL) does not imply a contaminant does not have serious adverse effects on human health.

EPA develops HAs to provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. An HA may exist for regulated or unregulated contaminants, with or without an associated MCL. HAs are an estimate of acceptable drinking water levels for a chemical substance based on health effects information and although EPA provides these values as non-enforceable technical guidance for unregulated drinking water contaminants, DEQ will require public notification in instances where a short-term HA is exceeded. Published HA concentrations are set at levels where health effects are not anticipated to occur over the specified exposure duration; one-day, ten-day, and lifetime. EPA's definitions are:

One-Day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to one day of exposure. The One-Day HA is intended to protect a 10-kg child consuming 1 liter of water per day.

Ten-Day HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for up to ten days of exposure. The Ten-Day HA is also intended to protect a 10-kg child consuming 1 liter of water per day.

Lifetime HA: The concentration of a chemical in drinking water that is not expected to cause any adverse noncarcinogenic effects for a lifetime of exposure, incorporating a drinking water RSC factor of contaminant-specific data or a default of 20% of total exposure from all sources. The Lifetime HA is based on exposure of a 70-kg adult consuming 2 liters of water per day. For most regulated contaminants, the MCL is based on chronic exposure that is comparable to the lifetime HA. However, even chronic contaminants can exhibit acute health effects if the levels are high enough. In order to determine at what level a contaminant exhibits acute health effects, DEQ will use EPA's one-day and ten-day HA levels or acute levels determined by state toxicologists. Acute levels are typically higher than the MCL, if an MCL is established, and represent scientifically based short-term or acute exposures with adverse health effects.

Implementation of Short-term HA Exceedances

When drinking water contains contaminant levels that exceed an EPA one-day or ten-day health advisory level or acute toxicity levels as determined by state toxicologists, DEQ or HD staff must manage the situation expeditiously. An exceedance of a one-day or ten-day HA is considered a health hazard as defined in the Idaho Rules for Public Water Systems, IDAPA 58.01.08.003.60 as it has the potential to have serious adverse effects on human health as a result of short-term exposure. Therefore, any exceedances of a short-term HA must be acted upon as soon as possible by DEQ or HD staff once laboratory results are known and verified. The following actions must be taken by the public water system (PWS) owner or operator:

Public Notification (PN). Tier 1 PN will be required for short-term HA exceedances in accordance with IDAPA 58.01.08.150.02, which requires Tier 1 PN for situations that have the potential to have serious adverse effects on health as a result of short-term exposure. The PWS owner or operator is required to deliver a PN within 24 hours of knowledge of the result. Providing accurate and timely PN allows consumers to make educated decisions regarding potential adverse health effects. Tier 1 PN should convey the urgency of the situation and make it clear to consumers what actions to take. PN must include specific information on the risks to any sensitive subpopulations (e.g., fetuses, infants) as identified in the associated health advisory. Tier 1 PN commonly includes a boil water advisory, a do not drink notice, or a do not use notice. Drinking water staff should consult with the state office rule lead to assist with determining the appropriate notification and wording. The PWS owner or operator must also submit a copy of the PN and the PN certification to DEQ or the HD.

As with other Tier 1 PN situations, in the event the PWS owner or operator does not provide proper notification, DEQ or HD staff must provide PN. A Tier 1 PN template is in the electronic data management system (#2018ADC9).

To remove the requirement for Tier 1 notification, the contaminant levels must drop and remain (or be reasonably sure they will remain) below the HA. This can be achieved by several possible actions, including taking the source off-line, adding/repairing/replacing treatment, or blending

sources to lower the concentration prior to entering the distribution system. In some cases, such as with a harmful algal bloom, the toxin levels may fall below the HA with time. PWS owners and operators should ensure that a sufficient volume of water is displaced or flushed from the distribution system (including storage tanks) to drop contaminant levels below the HA.

Sampling. Additional sampling will be required at a frequency established by DEQ and consistent with similar contaminants. The purpose of additional sampling is to assess the level, scope, source of contamination, and to determine when the PN is no longer necessary.

Limit exposure. In accordance with IDAPA 58.01.08.008, no public water system, or portion thereof, shall create a health hazard and any identified health hazard must be mitigated. This may require compliance agreement between the public water system owner and DEQ. A number of options are available to reduce concentrations of contaminants in drinking water. Contaminated wells may be taken off-line or blended with another water source to reduce levels entering the distribution system or treatment may be added, repaired, or replaced. Treatment options should be carefully evaluated, designed, and maintained to ensure effective treatment. Engineered plans and specifications must be approved by DEQ prior to installation of treatment or any material modifications. Long-term treatment changes must also be approved by DEQ prior to implementation. Point-of-use (POU) treatment options may also be available depending on the contaminant and do not require plan and specification approval, but must meet the requirements of IDAPA 58.01.08.450.

Implementation of Lifetime HA Exceedances

Exceedance of a lifetime HA is considered chronic exposure and therefore, does not constitute a health hazard as defined in IDAPA 58.01.08.003.60. The following actions are strongly recommended but are not required*:

Sampling. If sample results confirm that drinking water contains a contaminant above the lifetime HA, additional sampling is recommended to assess the level, scope, and localized source of contamination.

Public Notification. DEQ recommends that the PWS owner or operator notify consumers about the levels of the contaminant in their drinking water. The notice should include specific information on the risks to sensitive subpopulations (e.g., fetuses, infants, immunocompromised) as identified in the associated lifetime health advisory. PN should identify options that consumers may consider to reduce risk such as seeking an alternative drinking water source.

*Note that if the contaminant is detected as part of the unregulated contaminant monitoring rule (UCMR) in accordance with 40 CFR 141.207, then the PWS owner or operator must include the results in the annual consumer confidence report (CCR) in accordance with 40 CFR 141.151.

Limit exposure. A number of options are available to reduce concentration of contaminants in drinking water. Please reference the previous section.

Drinking Water Standards and Health Advisories (March 2018)

Table 1. Organics

FRDS Code	Chemical	Standards (mg/L)		Health Advisories (mg/L)		
		MCLG	MCL	1-day	10-day	Lifetime
	Acifluorfen (sodium)			2	2	
2265	Acrylamide	0	TT	1.5	0.3	
2015	Alachlor (Lasso)	0	0.002	0.1	0.1	
2047	Aldicarb	0.001	0.003	0.01	0.01	0.007
2044	Aldicarb sulfone	0.001	0.002	0.01	0.01	0.007
2043	Aldicarb sulfoxide	0.001	0.004	0.01	0.01	0.007
2356	Aldrin			0.0003	0.0003	
	Ametryn			9	9	0.06
	Ammonium sulfamate			20	20	2
2050	Atrazine	0.003	0.003			
	Baygon			0.04	0.04	0.003
	Bentazon			0.3	0.3	0.2
2990	Benzene	0	0.005	0.2	0.2	0.003
2306	Benzo[a]pyrene (PAH)	0	0.0002			
	Bis(2-chloro-1-methylethyl) ether			4	4	0.3
	Bromacil			5	5	0.07
2993	Bromobenzene			4	4	0.06
2430	Bromochloromethane	0.09		50	1	0.09
2943	Bromodichloromethane (THM)	0	0.08	1	0.6	
2942	Bromoform (THM)	0	0.08	5	0.2	
2214	Bromomethane	0.01		0.1	0.1	0.01
	Butylate			2	2	0.4
2021	Carbaryl	0.7		1	1	
2046	Carbofuran	0.04	0.04			
2982	Carbon tetrachloride	0	0.005	4	0.2	0.03
	Carboxin			1	1	0.7
	Chloramben			3	3	0.1
2959	Chlordane	0	0.002	0.06	0.06	0.004
2941	Chloroform (THM)	0.07	0.08	4	4	0.07
2210	Chloromethane	0.003		9	0.4	
2344	Chlorophenol (2-)			0.5	0.5	0.04
	Chlorothalonil			0.2	0.2	
2965	Chlorotoluene o-	0.1		2	2	0.1
2966	Chlorotoluene p-			2	2	0.1
	Chlorpyrifos			0.03	0.03	0.002
2054	Cyanazine			0.1	0.1	0.001
	Cyanogen chloride			0.05	0.05	
2105	2,4-D	0.07	0.07	1	0.3	
	DCPA (Dacthal)			2	2	0.07
2031	Dalapon (sodium salt)	0.2	0.2	3	3	0.2
2035	Di(2-ethylhexyl)adipate	0.4	0.4	20	20	0
2039	Di(2-ethylhexyl)phthalate	0	0.006			
2056	Diazinon			0.02	0.02	0.001
2944	Dibromochloromethane (THM)	0.06	0.08	0.6	0.6	0.06
2931	Dibromochloropropane (DBCP)	0	0.0002	0.2	0.05	
2440	Dicamba	0.2				4
2451	Dichloroacetic acid	0	0.06	3	3	0.03
2968	Dichlorobenzene o-	0.6	0.6	9	9	0.6

FRDS Code	Chemical	Standards (mg/L)		Health Advisories (mg/L)		
		MCLG	MCL	1-day	10-day	Lifetime
	Dichlorobenzene --			9	9	0.6
2969	Dichlorobenzene p-	0.075	0.075	11	11	0.075
2212	Dichlorodifluoromethane	1		40	40	1
2980	Dichloroethane (1,2-)	0	0.005	0.7	0.7	
2977	Dichloroethylene (1,1-)	0.007	0.007	2	1	0.4
2380	Dichloroethylene (cis-1,2-)	0.07	0.07	4	3	0.01
2979	Dichloroethylene (trans -1,2-)	0.1	0.1	20	2	0.1
2964	Dichloromethane	0	0.005	10	2	0.2
2334	Dichlorophenol (2,4-)			0.03	0.03	0.02
2983	Dichloropropane (1,2-)	0	0.005		0.09	
2412	Dichloropropene (1,3-)			0.03	0.03	
2070	Dieldrin			0.0005	0.0005	
	Diisopropylmethylphosphonate			8	8	0.6
	Dimethrin			10	10	2
	Dimethyl methylphosphonate			2	2	0.1
	Dinitrobenzene (1,3)			0.04	0.04	0.001
2270	Dinitrotoluene (2,4)			1	1	
2266	Dinitrotoluene (2,6)			0.4	0.04	
2041	Dinoseb	0.007	0.007	0.3	0.3	0.007
	Dioxane p-			4	0.4	0.2
	Diphenamid			0.3	0.3	0.2
2032	Diquat	0.02	0.02			
	Disulfoton			0.01	0.01	0.0007
	Dithiane (1,4)			0	0.4	0.08
	Diuron			1	1	
2033	Endothall	0.1	0.1	0	0.8	0.05
2005	Endrin	0.002	0.002	0.02	0.005	0.002
2257	Epichlorohydrin	0	TT	0.1	0.1	
2992	Ethylbenzene	0.7	0.7	30	3	0.7
2946	Ethylene dibromide (EDB)	0	0.00005	0.008	0.008	
	Ethylene glycol			20	6	14
	Ethylene Thiourea (ETU)			0.3	0.3	
	Fenamiphos			0.009	0.009	0.0007
	Fluometuron			2	2	0.09
	Fonofos			0.02	0.02	0.01
	Formaldehyde			10	5	1
2034	Glyphosate	0.7	0.7	20	20	
2065	Heptachlor	0	0.0004	0.01	0.01	
2067	Heptachlor epoxide	0	0.0002	0.01		
2274	Hexachlorobenzene	0	0.001	0.05	0.05	
2246	Hexachlorobutadiene	0.001		0.3	0.3	
2042	Hexachlorocyclopentadiene	0.05	0.05			
	Hexachloroethane			5	5	0.001
	Hexane (n-)			10	4	
	Hexazinone			3	2	0.4
	HMX			5	5	0.4
	Isophorone			15	15	0.1
	Isopropyl methylphosphonate			30	30	0.7
2994	Isopropylbenzene (cumene)			11	11	
2010	Lindane (BHC-Gamma)	0.0002	0.0002	1	1	
	Malathion			0.2	0.2	0.5

FRDS Code	Chemical	Standards (mg/L)		Health Advisories (mg/L)		
		MCLG	MCL	1-day	10-day	Lifetime
	Maleic hydrazide			10	10	4
	MCPA			0.1	0.1	0.03
2022	Methomyl	0.2		0.3	0.3	0.2
2015	Methoxychlor	0.04	0.04	0.05	0.05	0.04
	Methyl ethyl ketone			75	7.5	4
	Methyl parathion			0.3	0.3	0.001
	Metolachlor			2	2	0.7
2595	Metribuzin	0.2		5	5	0.07
	Monochloroacetic acid	0.03	0.06	0.2	0.2	0.07
2989	Monochlorobenzene	0.1	0.1	4	4	0.1
2248	Napththalene	0.02		0.5	0.5	0.1
	Nitroguanidine			10	10	0.7
	Nitrophenol p-			0.8	0.8	0.06
2036	Oxamyl (Vydate)	0.2	0.2	0.01	0.01	
	Paraquat			0.1	0.1	0.03
2326	Pentachlorophenol	0	0.001	1	0.3	0.04
	PFOA					7×10^{-5}
	PFOS					7×10^{-5}
	Phenol			6	6	2
2040	Picloram	0.5	0.5	20	20	
2383	Polychlorinated biphenyls (PCBs)	0	0.0005			
	Prometon			0.2	0.2	0.4
	Pronamide			0.8	0.8	
2077	Propachlor	0.9		0.5	0.5	
	Propazine					0.01
	Propham			5	5	0.1
	RDX			0.1	0.1	0.002
2037	Simazine	0.004	0.004			
2996	Styrene	0.1	0.1	20	2	0.1
	2,4,5-T			0.8	0.8	0.07
2063	2,3,7,8-TCDD (Dioxin)	0	$3.00\text{E-}08$	$1.00\text{E-}06$	$1.00\text{E-}07$	
	Tebuthiuron			3	3	0.5
	Terbcil			0.3	0.3	0.09
	Terbufos			0.005	0.005	0.0004
2986	Tetrachloroethane (1,1,1,2-)	0.07		2	2	0.07
2988	Tetrachloroethane (1,1,2,2-)			3	3	
2987	Tetrachloroethylene	0	0.005	2	2	0.01
	Tetrachloroerephthalic acid			100	100	
2218	Trichlorofluoromethane	2		7	7	2
2991	Toluene	1	1	20	2	
2020	Toxaphene	0	0.003	0.004	0.004	
2110	2,4,5-TP (Silvex)	0.05	0.05	0.2	0.2	0.05
2452	Trichloroacetic acid	0.02	0.03	3	3	0.02
2378	Trichlorobenzene (1,2,4)	0.07	0.07	0.1	0.1	0.07
	Trichlorobenzene (1,3,5)			0.6	0.6	0.04
2981	Trichloroethane (1,1,1)	0.2	0.2	100	40	
2985	Trichloroethane (1,1,2)	0.003	0	0.6	0.4	0.003
2984	Trichloroethylene	0	0.005			
	Trichlorophenol (2,4,6)			0.03	0.03	
2414	Trichloropropane (1,2,3)	0.04		0.6	0.6	
	Trifluralin			0.08	0.08	0.01

FRDS Code	Chemical	Standards (mg/L)		Health Advisories (mg/L)		
		MCLG	MCL	1-day	10-day	Lifetime
2424	Trimethylbenzene (1,3,5)	0.04		10		
	Trinitroglycerol			0.005	0.005	0.005
	Trinitrotoluene (2,4,6)			0.02	0.02	0.002
2976	Vinyl chloride	0	0.002	3	3	
2955	Xylenes	10	10	40	40	

Table 2. Inorganics

FRDS Code	Chemical	Standards (mg/L)		Health Advisories (mg/L)			Secondary MCL (mg/L)
		MCLG	MCL	1-day	10-day	Lifetime	
1002	Aluminum						0.05-0.2
	Ammonia					30	
1074	Antimony	0.006	0.006	0.01	0.01	0.006	
1005	Arsenic	0	0.01				
1094	Asbestos	7 MFL	7 MFL				
1010	Barium	2	2	0.7	0.7		
1075	Beryllium	0.004	0.004	30	30		
1079	Boron			3	3	6	
1011	Bromate	0	0.01	0.2			
1015	Cadmium	0.005	0.005	0.04	0.04	0.005	
1006	Chloramine	4	4			3	
1017	Chloride						250
0999	Chlorine	4	4	3	3	4	
1008	Chlorine dioxide	0.8	0.8	0.8	0.8	0.8	
1009	Chlorite	0.8	1	0.8	0.8	0.8	
1020	Chromium (total)	0.1	0.1	1	1		
1905	Color						15 c.u.
1022	Copper	1.3	TT				1
1024	Cyanide	0.2	0.2	0.2	0.2		
1025	Fluoride	4	4				2
1089	Foaming agents						0.5
1028	Iron						0.3
1030	Lead	0	TT				
1032	Manganese			1	1	0.3	0.05
1035	Mercury (inorganic)	0.002	0.002	0.002	0.002	0.002	
1084	Molybdenum			0.08	0.08	0.04	
1036	Nickel			1	1	0.1	
1040	Nitrate	10	10	100	100		
1041	Nitrite	1	1	10	10		
1038	Nitrate + Nitrite	10	10				
1920	Odor						3 ton
	Perchlorate					0.015	
1925	pH						6.5-8.5
1045	Selenium	0.05	0.05			0.05	
1050	Silver			0.2	0.2	0.1	0.1
	Strontium			25	25	4	
1055	Sulfate						250
1085	Thallium	0.0005	0.002	0.007	0.007		
1930	Total dissolved solids						500
	White phosphorous					0.0001	
1095	Zinc			6	6	2	5

Table 3. Microbiology

	Standards		Treatment Technique
	MCLG	MCL	
Cryptosporidium		TT	Must remove 99%
Giardia lamblia		TT	99.9% killed/inactivated
Legionella	0	TT	No limit
Heterotrophic plate count		TT	< 500 bacterial colonies per milliliter
Mycobacteria			
Total Coliforms	0	5%	< 5.0% TC+ in a month
Turbidity		TT	< 5 NTU
Viruses	0	TT	99.99% killed/inactivated

Cyanotoxin	Drinking Water Health Advisory (10-day)	
	Bottle-fed infants and pre-school children	School-age children and adults
Microcystin	0.3 µg/L	1.6 µg/L
Cylindrospermopsin	0.7 µg/L	3 µg/L